

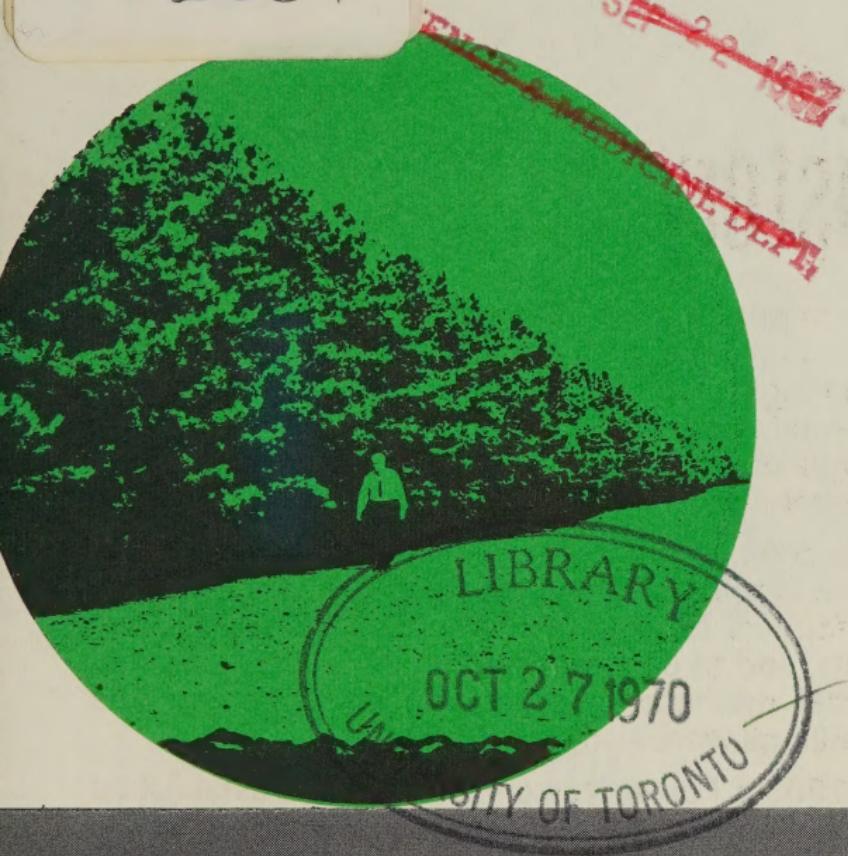
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SHELTERBELT TREES

CANADA DEPARTMENT OF AGRICULTURE

history

An organized tree-planting program was established on the prairies in 1901 under the Tree Planting Division of the Department of the Interior's Forestry Branch. Tree seedlings were produced on 15 acres at the Indian Head Experimental Farm, and on smaller acreage at Brandon.

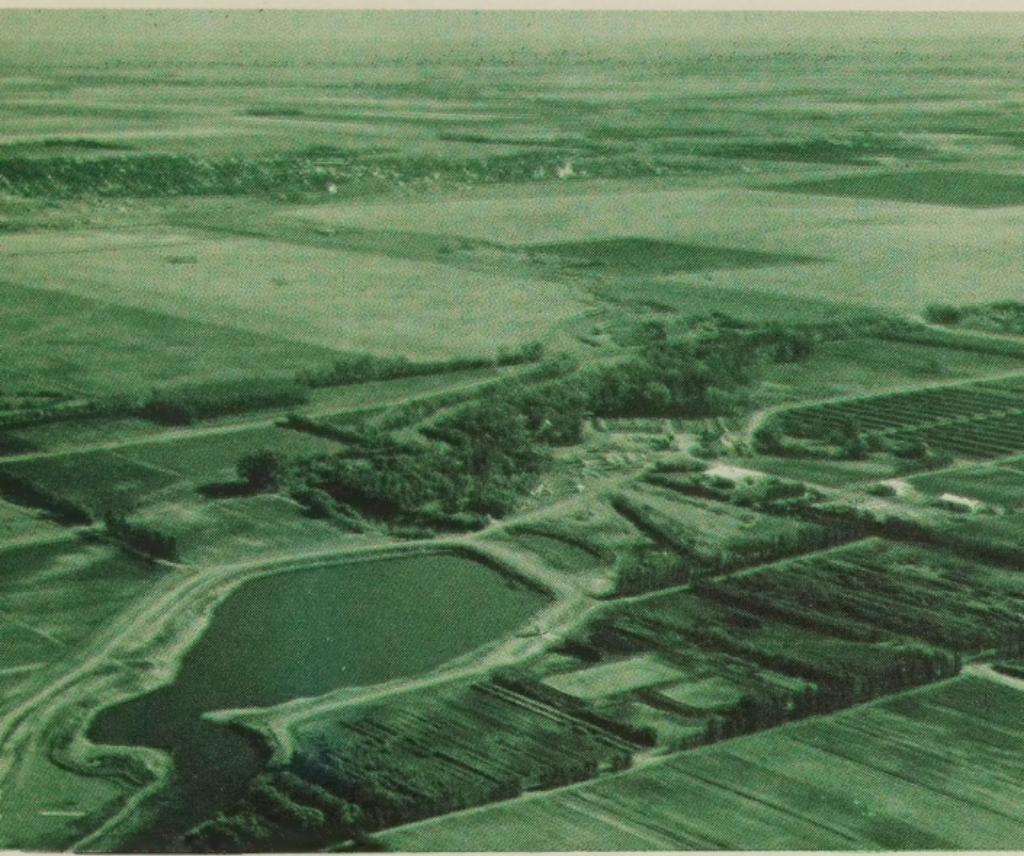
The demand grew rapidly after a staff of field men were employed to overcome the initial reluctance of farmers to use summerfallow land for shelterbelts, and to care for them properly after planting. Better methods of producing and shipping tree seedlings were also developed.

In 1903 a Forest Nursery Station was established at Indian Head where the present PFRA Tree Nursery now flourishes. It originally covered 160 acres, and in 1903 produced 920,000 trees for 616 interested farmers. The nursery expanded to 320 acres in 1906, and to 480 acres in 1910. Soon the demand for trees was exceeding production, necessitating establishment of a second nursery near Sutherland, Sask., in 1914. From then until 1930 the two nurseries were able to meet demands, and in 1929 distributed a record 8,673,000 trees.

In 1950 the Indian Head nursery grew to 640 acres, but the demand continued to exceed supply. From 1931 to the present, the Canada Department of Agriculture has been responsible for tree production, with first the Experimental Farm Service in charge of this activity, and then the Research Branch. PFRA took over responsibility for the nurseries in 1963. Since then, installation of irrigation facilities, improved handling techniques, and mechanization of operations have made possible the closing of the Sutherland station in 1966. Almost 11 million trees were produced in 1966, and this production is expected to reach 15 million by 1975 as a result of the intensified and improved production techniques.

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TREE NURSERY

tree production and distribution

In more than 65 years of operation under Federal Government sponsorship, Saskatchewan-based tree nurseries have produced in excess of 330 million tree seedlings for distribution to farmers. At present, production is more than 10 million trees per year.

Operating on such a large scale requires a year-round program. In the spring, final preparation of seed beds, seeding and transplanting of young trees takes place. Summer cultivation, insecticide spraying, and seed collection of some species is done during the warm months. In the fall, deciduous trees are lifted and heeled-in for the winter, fields are cultivated, and coniferous seed collected. The main winter activity involves the processing of up to 10,000 requests for trees, while work goes forward in the greenhouse. Coming back to spring, the heeled-in trees are lifted, packed and shipped.

creation and care of shelterbelts

DESIGNING SHELTERBELT

Field shelterbelt: One row of caragana and Siberian elm or ash, belt 40 rods (660 feet) apart, three-foot spacing in row. Roadside hedges 150 to 300 feet from road center depending on bylaws. Caragana at one-foot spacings, or caragana and ash alternated at three-foot spacings.

Farmstead shelterbelt: A basic shelterbelt should have at least three rows 4 to 6 feet apart of (1) caragana at 1-foot spacings, (2) ash and elm at 4- to 6-foot spacings, (3) Maple and Siberian elm at 4- to 6-foot spacings. To extend the shelterbelt, evergreens should be planted inside the basic belt, while additional rows of poplar can be planted on the outside.

MAKING APPLICATION

Applications are available from any PFRA office or from the Indian Head Tree Nursery.

PREPARING SOIL

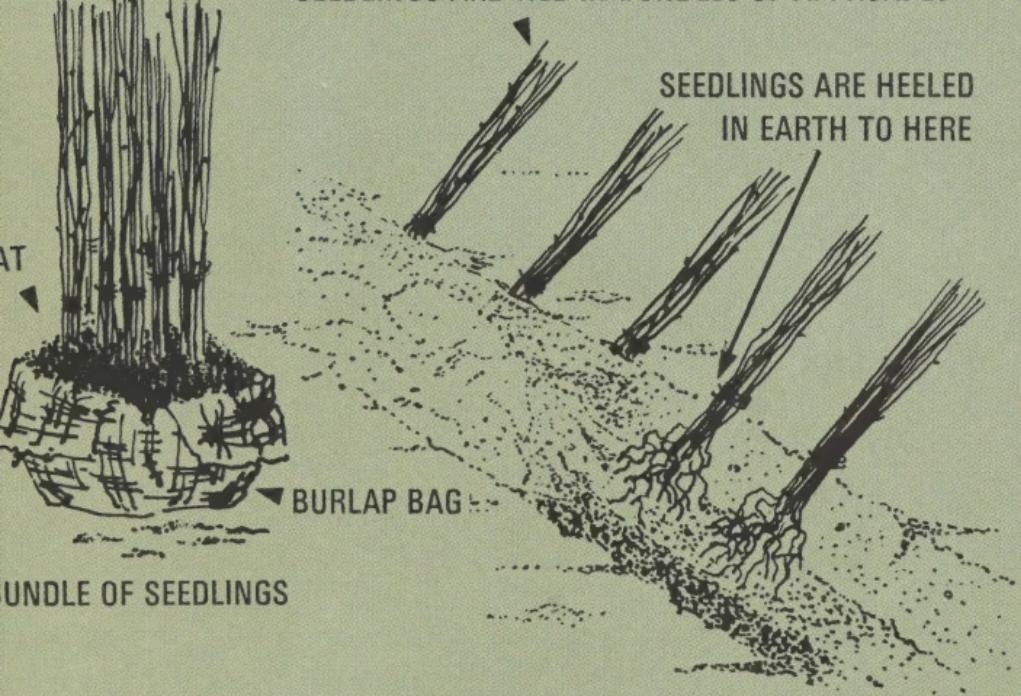
Summerfallow one year prior to planting to kill weeds and grass. Rework as required.



ACCEPTING AND HANDLING TREES

Tree seedlings are extremely perishable and must be handled accordingly. They are usually shipped by railway express to the point designated on the application. They should be picked up on the day they arrive at the express office. It is desirable that they be planted immediately, but if this is not possible, remove the burlap wrapping, dig a shallow trench in a cool spot, and put the roots of the trees in it. Backfill and, if dry, water occasionally until planted.

SEEDLINGS ARE TIED IN BUNDLES OF APPROX. 25



PLANTING

Use tree planting machine if available, otherwise plant by hand in furrows. Pack soil firmly.

POST-PLANTING CULTURE

Like any other crop, trees will only flourish with the application of good cultural practices. Clean, shallow cultivation in shelterbelts and for 20 feet on either side should be carried on annually. Irrigation at time of planting and for the first three years may be necessary. On farms where livestock are not confined, farmstead shelterbelts should be fenced to avoid damage from animals. Pruning is not recommended except to remove dead branches. Do not use 2,4-D near trees.

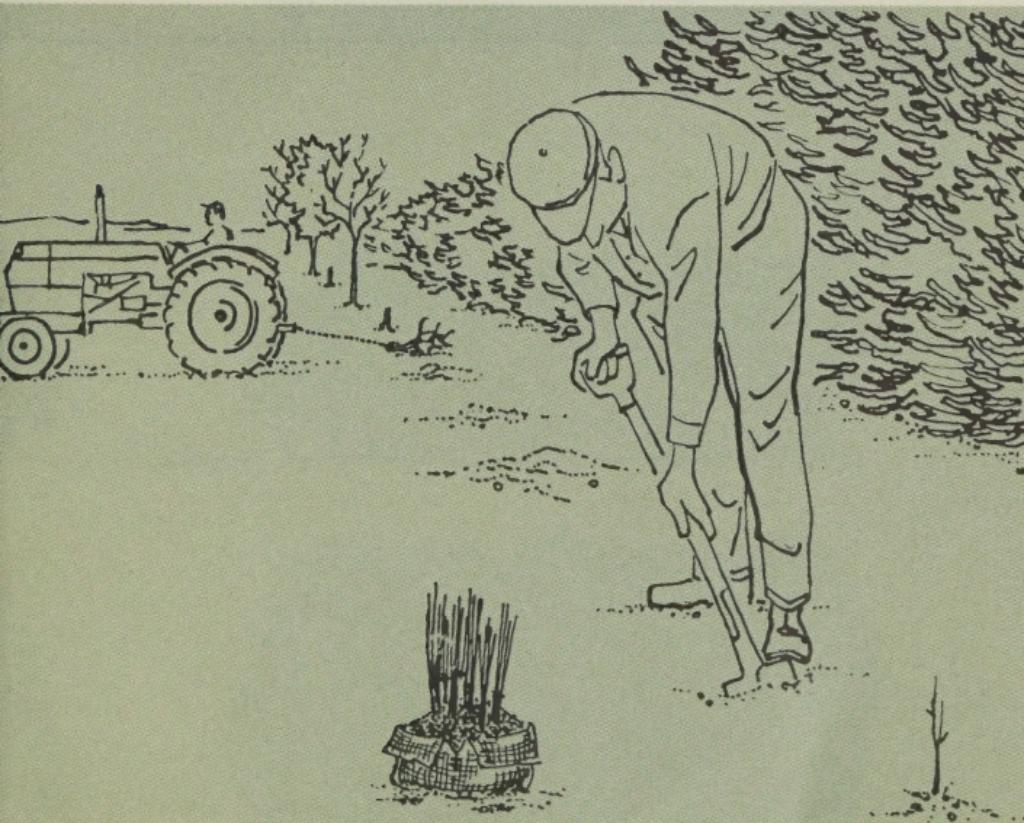


REPLACING TREES THAT FAIL

Some trees may not survive. These should be replaced as soon as possible so as to maintain appearance, continuity and effectiveness of the shelterbelt. If a large percentage of trees fail, consult your agricultural representative to determine the cause, and submit another tree order.

SPRAYING

Agricultural Representative should be contacted if in doubt as to sprays to be used on trees.
NOTE: Careless field spraying of 2,4-D can kill trees.



RESTORING OLD SHELTERBELTS

tree development

A six-foot poplar and maple pine are outside apart from each other. feet. Width to 40 feet in row spacing.

HEIGHT (feet)

CROSS SECTION

20



SIBERIAN ELM AND MAPLE

10

CARAGANA

POPLAR

ASH
OR ELM

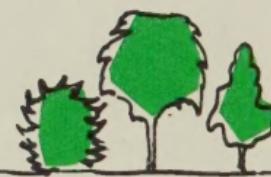
PINE

0

30



20



10

0

40

30

20

10

0



40

30

20

10

0



shelterbelt might ideally consist of an outside row of three middle rows, one of caragana, one of Siberian elm or ash, and the third of ash or elm; two inside rows, one of spruce and the other of spruce. Poplar should be planted 20 to 30 feet apart. Caragana, Ash, maple and elm should be planted 4 to 6 feet apart. Spruce should be 25 to 50 feet inside ash or elm and 6 to 8 feet apart. Total width of shelterbelt should range from 60 to 95 feet. When poplar dies in about 20 years, width would be reduced to 55 feet. Trees should be planted at 4- to 6-foot spacings except for caragana which may be planted at 1-foot

AGE

PROFILE

5 YEARS



10 YEARS



20 YEARS



40 YEARS



tree ailments and remedies

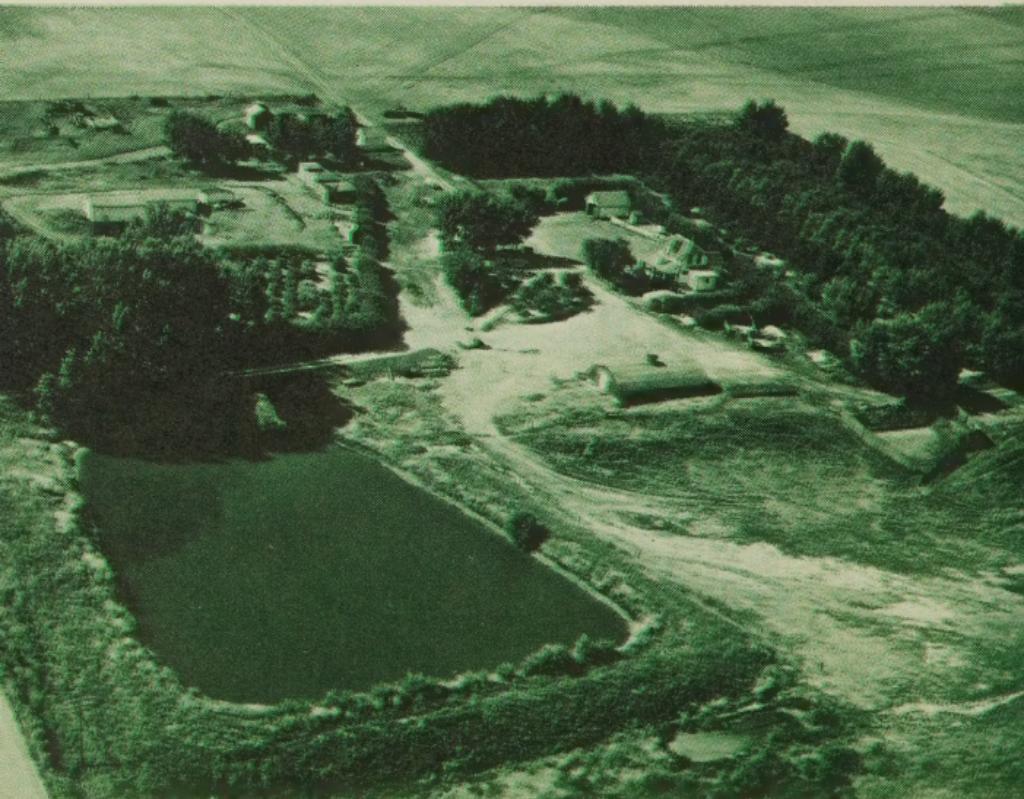
GIRDLING When the bark is broken all the way around a branch, it should be removed. If the main stem is affected in the same way, the tree will probably die.

CANKERS Wounds, frequently caused by insects, develop as a result of fungi that attack and kill the bark locally. Diseased branches should be removed. If the stem is diseased, it should be cut back with a clean, slanting cut and the cut treated with wound dressing. Removed parts should be burned immediately.

WOUNDS Open wounds should have ragged edges cut away and the wound dressed with a coat of white lead paint with Bordeaux mixture added.

DROUGHT Trees may be cut back before they become diseased. They may then grow from the root.

MATURE SHELTERBELT



types of shelterbelts

FARMSTEAD PLANTING

The benefits to be derived from planting a farmstead shelterbelt are many and varied, but basically they can be related to economics and beauty. Heating costs can be reduced in direct relation to the efficiency of the shelterbelt provided. Animals will also be more contented and healthier in well-sheltered buildings and pens than in those exposed to the elements. Snow clearing costs can be reduced. In addition, a well-treed place has a greater dollar value, and at the same time provides the beauty that brings pleasure and pride to a farm family.

To assure the greatest benefit, tree species should be selected intelligently, planted carefully, and attended diligently.



FIELD PLANTING

Field shelterbelts have proved themselves as economically sound investments for protecting fields from wind erosion, and for aiding in the retention of snow to increase soil moisture conditions in fields. The result is higher yields. It has also been determined that north to south shelterbelts are more effective than are east to west shelterbelts.

As in the case of farmstead shelterbelts, good cultural practices are important. Cultivated strips 10 to 20 feet wide should be provided and maintained annually on both sides of shelterbelts. Simazine herbicide may be used to control grass and most weeds in shelterbelts two years after planting, but shallow cultivation is better.

Tree planting machines may be available. Consult an agricultural representative.

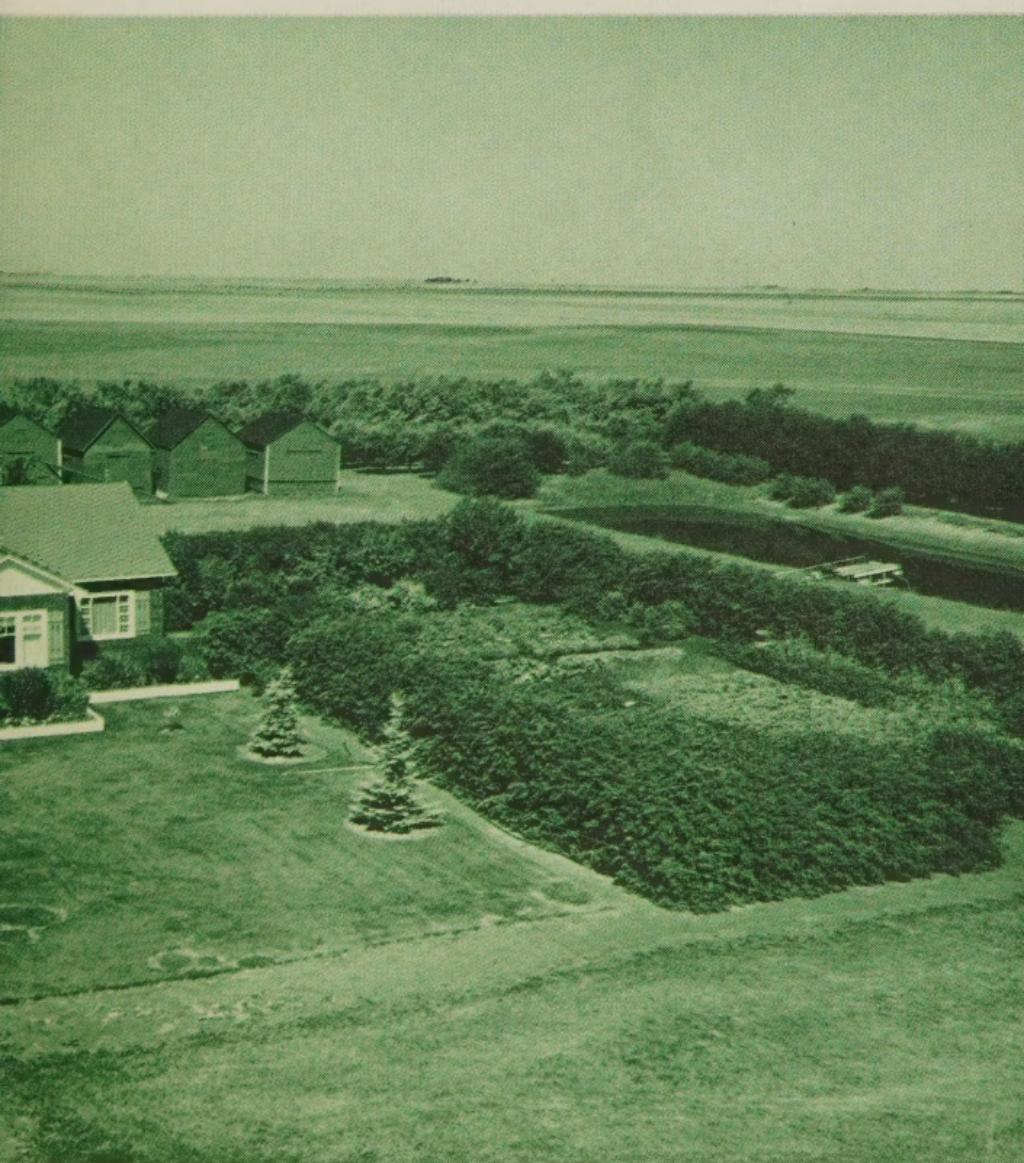


DAM OR DUGOUT PLANTING

Usually site, climate or soil conditions will dictate the kind of trees that should be planted. If a dam or dugout is situated in a relatively wet area, the farmer should consider the use of willows to serve as a snowtrap, and take into account the possibility of planting trees that will grow taller farther up the watershed beyond the wet area.

Trees generally should be planted no closer to a dam or dugout than is necessary, or species with little foliage should be chosen. This may prevent large quantities of leaves from falling or blowing into the dugout. Over a period of years, decaying leaves will build up on the bottom of the reservoir, reducing storage capacity and creating contamination hazards. This will necessitate more frequent dredging, or the need to empty the dugout so it can be cleaned.

Plant trees between the prevailing winds and the dugout for the best snow retention results.



SNOW FENCE PLANTING

The most effective, and therefore the most popular tree for the creation of "living snow fences" is the caragana. Its somewhat dense branch system provides a greater barrier to wind and snow, and its hardiness enables it to survive when other trees might die due to adverse conditions. It also stands up well during both wet and dry periods. Where fields or ditches are sprayed with 2,4-D, caragana demonstrated more tolerance than other species. However, for a healthy snow fence, take care when using such sprays to avoid damage and discoloration of caragana foliage.

Cultivation practices similar to those for other species should be employed in order to give the young plants the best possible opportunity to mature. Plant caragana trees 1 foot apart for the best effect.



FROM PFRA TREE NURSERY INDIAN HEAD, SASK.

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ROGER DUHAMEL, F.R.S.C., QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
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